INVESTIGATIONS OF PARASITES OF SWINE

Report for the period beginning January 1, 1939 and ending May 1, 1939, on Appropriation 1290700-032 (Disease of Animals Investigations of parasites of swine: 203)

Moultrie, Georgia

General Statements

1. Progress of the swine sanitation plan in the South: The business men and farmers of Georgia are rapidly adopting the plan and are growing more and better hogs at an earlier date, which are relatively free of parasites. In Colquitt County one sees the A type farrowing houses and other necessary equipments for growing hogs on this plan on all roads.

2. Losses from parasites to the growers: The farmers who grow hogs under the old plan have smaller litters which take from one to three years feed before they reach market weight. These same hogs eat approximately two ears of corn per day on a maintenance ration in order to carry them over the off season. They are then put in the peanut fields in late fall to fatten. Other losses enumerated in the last report.

3. The use of Phenothiazine for control of Parasites of swine, Based on the total Parasites in pig and total Parasites removed: The crude phenothiazine under critical tests, for all work completed, averaged 66.97 per cent efficacy on Ascarids and 92.16 per cent on Nodulars. The pure phenothiazine under the same tests and basis

averaged 41.57 per cent efficacy on Ascarids, and 96.52 per cent on Nodulars. In administering these chemicals to pigs we fed the crude drug with a ground mixed feed, while the pure drug was given in hard gelatin capsules per orum. Pigs do not readily eat the crude drug in feeds, and refuse the pure drug so mixed entirely, therefore this method of administration is not practical even though the per cent of efficacy on Ascarids was higher than for the pure chemical given by capsule.

4. Swine sanitation demonstration set-up under supervision of this office:

Through the cooperation of Swift and Company, who furnished the land, sows, feed, equipment and labor, we have a swine sanitary project where we maintain six brood sows raising two litters from each sow per year. At the present time we have 35 pigs from five sows,and hope to increase our farrowing to five litters in two years, per sow. We have had visitors from all the Southeastern states to this project, besides many Georgia farmers and officials.

5. Autopsies for Parasites and other diseases of swine: Numerous hogs have been autopsied with the finds that parasites and Hog Cholera are the causes of most losses and death, while filth born diseases and mineral deficiency diseases are very prevalent.

6. Sanitation as a control measure for Parasites: The present sanitary plan, as outlined by the Bureau, controls the Kidney worms, Lung worms, and Thorn heads, but does not control the Nodular worms, Stomach worms, or Ascarids. These last three named parasites are

controlled to some extent, but not completely, as borne out by actual autopsies of hogs raised on sanitary methods. No hook worms have been found in sanitary hogs.

A. Field Activities:

1. Notes on Field Autopsies of swine this period:

Table 1.

Animal			Parasites Found							Cause of Death
Age Wks	Nos	Mark	Nodulars	K. Worms	Ascarids	Hook	Whips	Stomach	Lung	Thornhead	
16	1	*	54	2	1	9	0	9	200	0	Destroyed(compound fracture femurs)
12	2	*	1	3	3	0	0	639	many	0	Caustic poison
48	3	*	17	many	1	0	hunds	few	many	1	Necrotic enteritis
48	4	*	many	few	few	0	few	few	0	0	Cholera
40	5	*	many	few	few	0	0	0	few	0	Cholera
48	6	*	many	many	many	0	few	few	few	0	Peritonitis
72	7	*2/									Necrotic enteritis
19	8	*	many	few	many	0	few	few	many	0	Cholera
19	9	*	many	few	many	0	few	few	many	0	Cholera
240	10	*	29	0	0	0	0	100	0	0	Necrotic enteritis
16	11	*	many	few	many	few	many	hunds	thous	0	Rape poisoning
25	12	**	3	0	10	0	0	0	0	0	Slaughtered
25	13	**	4	0	3	0	0	0	0	0	Slaughtered
25	14	***	243	0	1	0	1	144	0	0	Slaughtered
25	15	***	14	0	0	0	0	10	0	0	Slaughtered
25	16	***	184	0	11	0	0	0	0	0	Slaughtered
25	17	***	399	0	0	0	0	100	0	0	Slaughtered
25	18	***	489	0	3	0	2	100	0	0	Slaughtered
28	19	***	48	0	1	0	2	21	0	0	Slaughtered
28	20	***	643	0	37	0	1	38	0	0	Slaughtered
28	21	***	58	0	5	0	1	2	0	0	Slaughtered

Note: * Denotes general run of unsanitary hogs.
** Denotes sanitary hogs from Florida Coastal Experiment Station, Quincy.
*** Denotes sanitary hogs from Georgia Coastal Plains Experiment Station, Tifton.
2/ This hog died of necrotic enteritis, the intestines were grown together, making an autopsy for parasites impossible.

Summary of Table 1 - on Parasites: All the hogs showed Nodular worms from both the sanitary and unsanitary lots. All sanitary hogs were free of Kidney worms. Eight out of ten sanitary hogs autopsied showed Ascarid infestation. Nine out of eleven unsanitary hogs showed Ascarids And one of these negative hogs was old, while the other one could not be autopsied. Two of the twenty-one hogs showed hook worms; none of the sanitary hogs were infested with hooks. Eleven of the hogs autopsied showed whip worms, five of which were sanitary hogs. No lung worms or thorn heads were found in the sanitary hogs. From the above findings it is apparent that we have a problem in developing control methods for Nodulars, Ascarids and Stomach worms. This should be a modification of the present system, or an improvement on same.

Aside from the above autopsies this office has checked all slaughters of hogs raised on sanitary farms by Future Farmers Association Boys, farmers, and Experiment Stations, for Kidney worms, by a routine examination of the kidneys and livers at the time of slaughter.

2. Meetings attended during this period: Lectures were given on swine sanitation at several large farmer and business men's meetings. One large farmer's meeting on swine sanitation was attended at Cairo, Georgia. The Purina Feed Company held a meeting in Moultrie on Swine Sanitation, visiting our sanitary set-up, where we discussed with these men the methods and valuation of growing swine under the sanitary methods, as well as proper care and feeding of the sows and pigs. A swine sanitation meeting was held in the Bureau of Animal Industry Office, here in Moultrie, on April 6th and 7th, of Federal Bureau men on

Hog Cholera and sanitation, State and private practitioners interested in the work attended. Thirty men attended this meeting and all southeastern States were represented by Bureau men, and we had two States represented by their respective State Veterinarians, Dr. J. M. Sutton from Atlanta representing Georgia and Dr. William Moore from Raleigh, N. C. representing his State. The program was for a two day period with fidd trips to our project, farms on sanitation as well as those raising hogs on the unsanitary method in Colquitt County. A trip was arranged through Swifts Packing House where they were killing hogs, giving these men an opportunity to observe the detrimental effects of parasites on swine at slaughter. A banquet was held on the night of April 6th, with three main speakers who spoke on the value of the old and new method of growing swine in the South. At the meeting on April 7th Dr. Benjamin Schwartz, Chief of the Zoological Division, Washington, D. C., spoke on swine sanitation and elaborated on the first work done on parasites of swine with particular reference to the round worms. He also gave a general outline of some of the problems and their control under the sanitary methods.

Dr. H. W. Schoening, Chief of the Pathological Division, Washington, D. C., gave a lecture on swine diseases and their relations to our sanitation projects. Mr. H. B. Franklin, Colquitt County Vocational Teacher, spoke on his methods of approach with the farmers and enumerated the many problems which he confronted in getting the farmers to set up their farms on the sanitary plan. Each State Veterinarian and Bureau man was asked to give an account of the progress of their work on sanitation in their respective States. Most of these men reported

little or no success. A post mortem demonstration for Parasites of swine was put on by the writer. We were able to demonstrate all the common Parasites found in swine in the Southeast. A demonstration on passing capsules in swine was given by the writer. The meeting adjourned at 5:00 P.M. This meeting was called for the purpose of developing a uniformity of procedure on swine sanitation in the South, and from the reports we accomplished our purpose.

Dr. J. M. Sutton, State Veterinarian of Georgia, Dr. W. C. Dendinger, Inspector in Charge Tuberculosis eradication, and I visited the State College at Athens, in view of setting up a sanitary project on the University herd. The officials in charge promised to adopt our methods and I have received word that they later remodled their entire system, and are now teaching sanitation in the classes, and demonstrating it in the field. We also visited Governor Ed Rivers, who stated that all the penal institutions would follow our plans in raising their hogs.

3. Visits to swine sanitation projects: All the swine sanitation projects in Colquitt County were visited,and corrections, or alterations, were given if needed. Most of these farmers are doing a very good job of following out our plan, and have a number of good pigs about ready for the market. We are advocating a new type watering trough (see fig. 8) on these projects, and to date one farmer has built one and he told me that he would not do without it for any price. He formerly used the air pressure barrel, and was continually bothered with mud holes and losing water, as well as accomplishing nothing from a sanitary way in raising hogs.

a. Table 2. Farms, their location and the number of sows on Sanitation since January 1, 1939 and to date.

Table 2.

Owner or Renter	Location	County	Number of Sows
Duncan Sinclair	Moultrie	Colquitt	6
A. T. Hays	"	"	12
Dorsey Luke	Meigs	"	4
Bernice White	Meigs	"	2
E.Brown (colored)	Moultrie	"	10
J. O. Stewart	"	"	75
Leon Norman	Norman Park	"	30
Dr. Megahee	"	"	12
Grady Bennett	Moultrie	"	20
Hugh Arnett	"	"	1
Earl Bell	Doerun	"	1
Ben Galloway	Moultrie	"	8
W. W. Pope	"	"	8
Yancey	Norman Park	"	6
Nathon Carlton	Moultrie	"	4
Wallace Giles	"	"	1
Tom Hudson	Meigs	"	2
Robert Cagel	Hartsfield	"	4
Wayne Baxter	Moultrie	"	4
A. D. Chitty	"	"	1
Curtis Williams	"	"	2
	Total		211

Aside from those enumerated in the table above, we have the following additions to those listed in the last report.

1. Mr. J. B. Shepard has added 20 sows.
2. Mr. Henry Barber has added 30 sows.
3. Mr. John Taylor has added 6 sows.

We also have the following projects drop out and revert to the old method.

1. Payne Whitney Estate with 300 sows.
2. Mr. Baker with 10 sows.

4. Swine Sanitation Demonstration Project under Government Supervision: Through the cooperation of Swift and Company this office has established an ideal sanitary project just north of the office, where we maintain six brood sows on a five acre plot. This plot is divided into five equal size pastures and numbered. Plot numbers 1 and 3 are used for farrowing and maintaining the sows and pigs through suckling periods, which is approximately eight weeks. Plot numbers 2 and 4 are used to maintain the weaning pigs, while plot number 5 is utilized for the sows only, during the dry and gestation periods. In plot number 5 we are building a fattening pen to finish these pigs raised on the project.

The pigs will be raised, carried and finished on this acreage, having no access to other premises. To date we have 35 pigs from 5 sows on this project, and have three more sows bred to farrow in August. The first fourteen pigs were farrowed on January 23 and 25th, 1939. Two of these pigs were weighed on May 3rd, 1939, the smallest weighing 69 pounds and the largest weighing 89 pounds, their ages being 13 weeks. One litter of six pigs at the age of 8 weeks weighed an average of 45.5

pounds with the largest pig weighing 50 pounds. The second litter, which is three days under 8 weeks of age, with nine in the litter, averaged 24.6 pounds, their mother a young duroc jersey gilt. The third litter of six pigs, and just 8 weeks of age, weighed an average of 25.7 pounds. These pigs have all been grazing on oat pasture and fed corn, tankage, minerals, charcoal and shorts from self feeders. All the pigs on this project have received the double treatment for hog cholera at suckling ages.

The project is set up as an ideal for the farmers of the Southeast, and is run on strictly sanitary basis. The sows and pigs have separate feeding quarters, houses and other equipments as recommended for sanitation. The watering system is from pressure pipes, and the level in the troughs is controlled by an automatic float. See figures 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 for details of the project, and pigs. The pigs farrowed and raised on this project will go direct to the packing house and be slaughtered. The viscera from each will then be brought to this office and run for parasites in the usual method. This will give us a direct check as to the value of sanitation, as now practiced in controlling all parasites of swine. The sows are checked for parasites prior to, and during the operation of the entire project. An accurate account and cost of all feeds fed the pigs during the suckling period, pasture period, fattening period, and for the sows through the entire time of the project, is being kept.

Note the improved self oiler in action in Figure 7; the sows and pigs used this oiler with gratifying results, and are now free of all lice. The little pigs would straddle the horizontal post and smear themselves

where the lice were biting. We use old crankcase oil for this purpose.

B. Office and Laboratory Activities:

1. Through the cooperation of Dr. H. B. Randall, Inspector in Charge, Meat Inspection, Moultrie, Georgia, and his force with this office, a display of fresh parasitic specimen was prepared for the Southeastern Swine Sanitation meeting held on April 6 and 7th, 1939. These specimen comprised all the parasites found on the killing floor in hogs at this station. We displayed the parasites in the tissues, showing the pathology involved, as well as having the parasites in bottles for display. This office also has a standard display of all the prevailing parasites of swine found in the South, to date.

2. Numerous letters of inquiry on sanitation, as well as requested bulletins, have been sent out to farmers and others.

3. Cooperation has been extended to all interested parties on sanitation. The Georgia-Florida Railroad has recently placed a man as Livestock Specialist on their payroll, and his job is to get as many farmers along their Line as possible to grow hogs on the sanitary plan. He has been given full cooperation and assistance. He has several new projects in the making. The Jazz Feed Company, operating in the Southeast, has recently purchased the Motion Picture on Better Pork Production, which tells the story of swine sanitation. They are showing it at all meetings over the South.

The State of Georgia Extension Service Department has recently employed a man as Swine Specialist. His work and program is to establish a

swine sanitation project in every county of the State. He works through the respective County Agents in each county. To date he has 6 such projects in operation, the County Agent keeping a direct check on the set up. This office is cooperating with his department in the furthering of this good work.

4. Fecal Examinations for Parasites: Numerous fecal examinations for parasites have been made of swine, recommendations given for proper control and treatments. The entire sow herd at the Coastal Plains Experiment Station, Tifton, Georgia, is being examined for parasites.

5. Results on the use of crude Phenothiazine for controlling Parasites of swine:

All pigs were fasted 24 hours prior to treatment. This drug was given with a mixed feed in a ratio of 1 part drug to 4 of feed. Pigs were killed between the sixth and ninth days following treatment, except those retreated. The urine was red for the first four of five days. There were no symptoms noted as a result of the drug. ~~Eleven~~ 477 had good appetites throughout the experiments. Pigs were tested for parasitic ova at the end of 6 days, and if they showed heavy Ascarid and Nodular eggs in feces, these pigs were retreated.

a. Table 3. Gives the results on Nodular worms:

Pig No.	Weight Lbs.	Treated Date 1938	Dose Gms.	Dose Rate Per Lb. in Gms.	Autopsy Date 1938	Total Parasites Removed No.	Autopsy No.	In Pig No.	Efficacy Per Cent	Remarks or Symptoms
1										Died 1/
2										Lost 2/
3	9.0	9-14	4.5	.5	9-21	61	1	62	99.3	None
4	9.75	9-14	4.8	.5	9-19	3	0	3	100.0	None
5	7.0	9-14	3.5	.5	9-22	122	9	131	93.13	None
6	20.0	9-18	10.0	.5	9-26	1136	25	1161	97.84	None
7										Died 3/
8	12.0	10-14	6.0	.5	10-17					Died 4/
9	8.5	10-25	4.25	.5	11-1	4	1	5	80.00	None
10	55.0	10-28	27.50	.5	11-8	25	32	57	43.86	None 5/
11										Sent Back
12	18.5	11-8	9.25	.5	11-17	1149	53	1202	94.00	None
13	24.0	11-8	12.00	.5	11-17	120	3	123	97.56	None
14	14.0	11-18	7.00	.5	11-28	706	48	754	93.63	None
15	13.75	11-18	6.4	.5	11-28	352	190	542	64.94	None
16	29.00	11-30	14.5	.5	12-9	788	13	801	98.37	None
17 &	28.00	11-30	14.0	.5	12-9	88	8	96	91.66	None
		1939			1939					
18	64.0	1-6	43.8	.684	1-9	46	22	68	67.6	Died 6/
19	39.0	1-4	21.45	.55	1-13	11	0	11	100.0	None
20	59.0	1-11	59.	1.0	1-21	11	0	11	100.0	None
21	27.0	1-16	16.9	.7	2-1	0	0	0	---	None 7/
22	26.5	1-16	18.6	.7	2-1	0	0	0	---	None 7/
23	25.8	1-16	15.5	.6	1-24	2	0	2	100.0	None
24	16.7	1-16	12.0	.7	2-1	2	0	2	100.0	None
25	18.0	1-16	10.8	.6	1-24	0	0	0	---	None
26	26.0	1-16	15.6	.6	1-24	0	0	0	---	None
27	51.0	2-8	22.24	.436	2-17	113	1	114	99.1	None
28	48.0	2-8	25.29	.527	2-25	40	0	40	100.0	None 8/
	Totals					4779	406	5185	92.16	

Note: The percentage of efficacy for the crude drug was 92.16 average.

Table 3. (Continued on Page 14)

Table 3. (Continued)

1/ Died of strangulation when capsuling.

2/ Broke out of pen and could not be found. Not treated.

3/ Died of pneumonia. Not treated.

4/ Died of general pyemia, pneumonia and hepatitis. Treated but not recorded, as pig died on third day.

5/ Refused feed and drug mixture, but was forced to consume some each day in feed.

6/ Died of generalized peritonitis, pyemia and lobar pneumonia, not as result of treatment.

7/ Redosed in ten days at same dose rate.

8/ Ate drug with feed at rate of .227 grams per pound weight, and was retreated via capsule giving .3 grams per pound weight eleven days after first dosage.

--- Indicates no parasites in pig.

b. Table 4. Gives the results on Ascarids: The weight of the pig, date treated, dosage methods of administration, the drug symptoms and date of autopsy is corresponding with that in Table 3. The remarks and symptoms are as in Table 3.

Pig No.	Total Parasites Removed		Total Parasites Autopsy		Total Parasites In Pig		
	Mature No.	Immature No.	Mature No.	Immature No.	Mature No.	Immature No.	Efficacy Percent
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	84	0	4	0	88	0	94.30
4	3	0	5	0	8	0	37.50
5	5	0	5	0	10	0	50.00
6	0	0	0	0	0	0	---
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-
9	0	0	5	0	5	0	00.00
10	0	0	0	2	0	2	00.00
11	-	-	-	-	-	-	-
12	0	0	0	0	0	0	---
13	0	0	1	0	1	0	00.00
14	4	0	4	0	8	0	50.00
15	80	0	6	0	86	0	93.00
16	6	0	3	0	9	0	66.66
17	0	0	3	0	3	0	00.00
18	2	0	1	0	3	0	66.6
19	11	0	1	0	12	0	91.66
20	60	0	2	0	2	0	00.00
21	1	0	12	0	13	0	0.78
22	8	0	24	0	32	0	25.00
23	0	0	0	1	0	1	0.00
24	0	1	4	17	4	18	4.54
25	1	0	3	0	4	0	25.00
26	0	0	0	0	0	0	---
27	9	0	0	0	9	0	100.00
28	2	2	5	0	7	2	44.40
Totals-	216	3	88	20	304	23	66.97

--- Indicates no Ascarids in pig.

Note: The percentage of efficacy for the crude drug was 66.97 average.

5. Results on the use of Pure Phenothiazine for controlling Parasites of swine: All pigs were fasted 24 hours prior to treatment. This drug was given via capsules. The pigs were killed between the sixth and ninth days, following treatment, except those retreated. The urine was red for the first four or five days. There were no symptoms noted as result of the drug, but a few of the pigs exhibited some signs of nausea for a few minutes following the capsuling. All had good appetites throughout the experiments. Few pigs had firm bowel passages for a few days, but loosened up the third or fourth day.

a. Table 5. Gives the results on Nodular worms:

Table 5. Pure

Pig No.	Weight Lbs.	Treated Date 1939	Dose Gms.	Dose Rate Per Lb. in Gms.	Autopsy Date 1939	Total Parasites Removed No.	Autopsy No.	In Pig No.	Efficacy Per Cent	Remarks or Symptoms
29	37.0	2-8	3.7	.1	2-17	21	0	21	100.0	None
30	65.0	2-18	6.5	.1	2-25	50	0	50	100.0	None
31	73.0	2-18	7.3	.1	2-25	284	0	284	100.0	None
32	70.0	2-28	10.5	.15	3-7	18	0	18	100.0	None
33	60.0	2-28	12.0	.2	3-7	140	2	142	98.59	None
34	28.0	3-14	2.5	.086	3-21	1	0	1	100.0	None
35	24.0	3-14	2.4	.1	3-21	2	0	2	100.0	None
36	22.2	3-14	2.2	.1	3-21	4	0	4	100.0	None
37	32.0	3-23	3.2	.1	4-5	42	0	42	100.0	None 1/
38	22.0	3-23	2.2	.1	4-4	6	0	6	100.0	None 1/
39	27.2	3-23	1.4	.05	4-5	0	17	17	00.0	None 1/
40	40.2	4-11	4.0	.1	5-10	3	0	3	92.0	None 2/
41	32.0	4-11	3.2	.1	5-10	5	2	7	71.43	None 2/
42	30.2	4-11	3.0	.1	5-10	7	0	7	100.0	None 2/
Totals						583	21	604	96.53	

1/ Pigs redosed in 15 days after first dose, same dose as first, efficacy on both treatments.
2/ Pigs redosed in 21 days after first dose, .1 grams on weight at second dose. These pigs received 5.2, 4.1 and 3.8 respectively on second dosage.
Note: The percentage of efficacy for the pure drug was 96.53 average.

b. Table X.6 Gives the results on Ascarids: The weight of the pig, date treated, dosage methods of administration, the drug and date of autopsy is corresponding with that in Table 5. The remarks and symptoms are as in Table 5.

Table 6. Pure

Pig No.	Total Parasites Removed Mature No.	Removed Immature No.	Autopsy Mature No.	Autopsy Immature No.	In Pig Mature No.	In Pig Immature No.	Efficacy Percent
29	5	0	0	1	35	1	83.33
30	7	0	1	0	8	0	87.50
31	1	0	7	0	8	0	12.50
32	1	0	2	1	2	2	25.00
33	0	0	0	0	0	0	---
34	69	0	42	3	111	3	61.40
35	0	0	3	93	3	93	00/00
36	1	0	0	25	1	25	3.84
37	13	0	6	0	19	0	68.42
38	26	31	0	98	54	101	36.78
39	0	1	5	10	5	11	6.25
40	19	45	6	0	25	45	92.00
41	0	0	3	0	3	0	00.00
42	0	3	6	0	9	0	33.33
Totals-	142	80	81	231	253	281	41.57

--- Indicates no Ascarids in pig.

Note: The percentage of efficacy for the pure drug was 41.57 average.

a. Results: The chemical phenothiazine given on the feed proved to be 92.16 percent efficient on Nodulars and 66.97 on Ascarids respectively. The pure chemical when given on feed was refused, even after an extended period of fasting. This latter form of phenothiazine given in capsules was 96.53 percent efficient on Nodulars and 41.57 percent efficient on Ascarids. The dosage recommended in the crude form, with mixed feed, is .5 grams per pound weight, while the dosage rate recommended for the pure chemical is .1 gram per pound weight, given in capsules. These pigs may be fed immediately after capsuling, or after they have eaten all the drug mixture. We obtained the best results when the pigs were immediately fed.

No deliterious effects were noted in the pigs after consuming the chemical in feed or following capsuling. A few of the pigs had a firm passage for the first three or four days. A few of the pigs capsuled with this drug showed some signs of distress. They would retch, attempt to vomit and slobber for a few minutes, but recovered rapidly and began to eat. I do not attribute these symptoms to the chemical, but rather to faulty administering of the capsules. If one is adept at capsuling these pigs he observes no symptoms. One must get the capsule back over the bridge of the tongue and release the pig at the same time the capsule is released. One may use a dry gun or the water gun; the preference is up to the operator and his skill with each or either.

Methods of determining the efficacy on these experiments was described in the quarterly report submitted in January.

Pigs do not show any deliterious effects from the repeated does of this chemical given via mouth by capsules.

Most pigs will refuse the second dosage with feed, but we were able to get a few small pigs to consume the mixture. The larger the pig the less apt he is to eat the mixture.

5. Pictures: A report of this nature would not be complete without pictures which tell the story of the work done in the field.

Fig. 1 - Typical hogs seen along the highways of the Southeastern States, raised on the open range, and of a nondescript breeding. These hogs are marketed when they are of market weight, which is usually 1 to 2 years of age and then of an inferior quality. They are heavily parasitized, and of no value to the owner or community.

Fig. 2 - Some of the farmers sanitary pigs eating from a self feeder. Note fence around feeder which has small gates, allowing the pigs to come and eat at free will, while the sows cannot get in. The platform on both sides prevents mud wallows or accumulations of filth. This entire equipment is portable and is moved about in the field, or to a new field.

Fig. 3 - Sows on a sanitary farm, eating in the sow feeding quarters. No pigs are allowed in this enclosure. The sows are placed in this pen morning and night, fed, allowed to remain for two hours, all trash and manure is removed daily.

Fig. 4 - Farmers practical sanitary setup, showing A type houses and pen with pig creeps and sow gates.

Fig. 5 - Farmers sanitary sun shade which is movable, serviceable, cheap and highly desirable. Note cleanliness and barren ground.

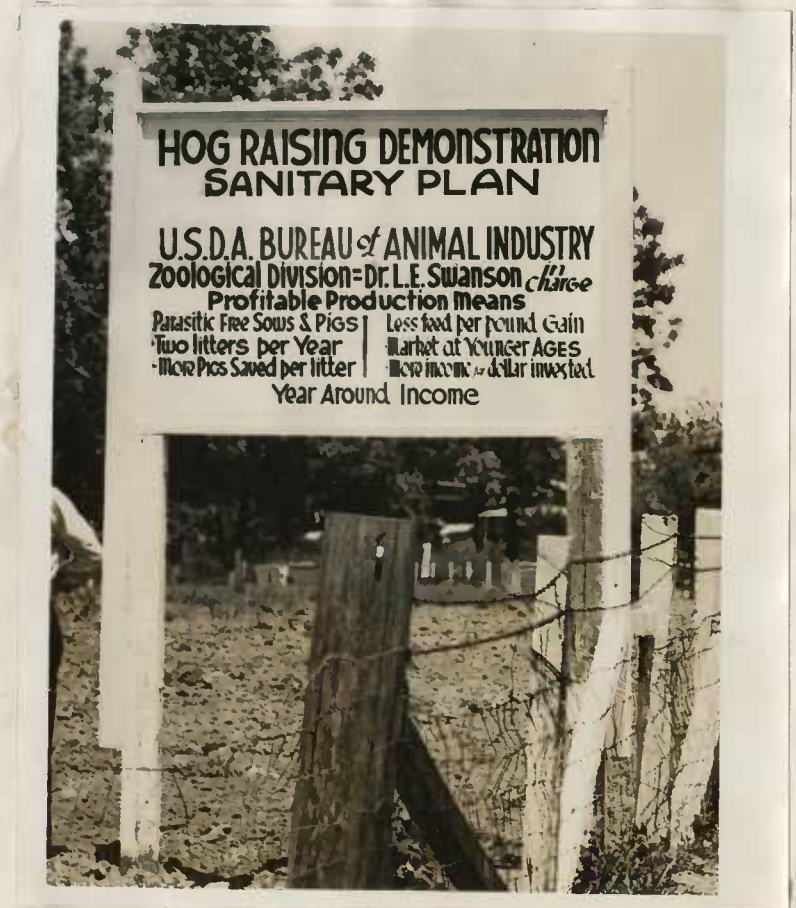

Fig. 6 - Sign displaying the Government project with valuations enumerated as to the benefits of following swine sanitation in the Southeast.

Fig. 7 - Hog self oiler for sows and pigs. The posts are wrapped with burlap sacks and soaked with crank case oil. The vertical post is used by the sows as shown in the picture while the horizontal post is used by the pigs. These little pigs will straddle this post and smear their bellies where the lice are biting.

Fig. 8 - A practical and cheaply constructed watering trough for hogs on sanitary setups where pressure water is not available. The level of the water in the trough is controlled by an automatic float seen in the picture. This float is protected from animals by enclosing same as part of the trough. The platform is six feet wide and seven feet long. The planks are spaced about one-half inch apart to allow any water spilled to run off. This trough was designed and built by the writer, and can be built by any farmer with material at hand. He will, however, have to purchase the the barrel, float and valve at a cost of approximately $2.00.

Fig. 9 - A type houses for sows and pigs. Note: Guard rail to protect the pigs from being mashed by the sow. These houses have a fence around each when the sows are put in to farrow, the fence has a gate for the sows and a creep for the pigs; when the pigs are old enough to know their house these enclosures are removed as shown. Note the bare strip and cleanliness around the houses.

Fig. 10 - Sow pasture for their dry and gestation periods. No pigs are allowed in this pasture. Note the houses on bare strip, and the oat fields in the back and to the right.

Fig. 11 - Swine sanitary setup on Government Demonstration project, showing sow feeding pen with gate on the left, A type houses in center and the pig creep on the extreme right. Note the bare strip and cleanliness with sows and pigs grazing on oats.

Fig. 12 - Bare strip along fences where sows and pigs deficate and urinate. The most frequented place in a piggery is around the houses, feeding pens, watering troughs and the fences and this is where one finds most the manure and urine passages. Keep them bare so the sun will have an apportunity to destroy the eggs and larvae. Note the heavy growth of oats in April.

Fig. 13 - Pig creep for pigs with self feeder in enclosure, showing pig gate which allows the pigs to come and go at will, but too small to allow the sows access to the feeders. These pigs will start eating from these feeders at seven to ten days age. We keep shelled corn, shorts, tankage, minerals and charcoal in these feeders at all times. Each one of these feeds have a separate compartment.

Fig. 14 - Pigs on the Government Sanitary setup at three weeks of age. Their mothers are in the sow feeding pens seen back of the pigs.

Fig. 15 - Sanitary pigs (5 weeks old) and their mothers at the watering trough. Note: The cleanliness and lack of wallows and litter.

Fig. 16 - Registered Poland China Sow and her five week old pigs on the Government setup. Note: The grazing field of oats in the background.